

CLAIMS

1. A high speed dubbing apparatus, comprising:

a read section for reading a bit stream conforming to a DVD-VR standard from a first storage device, and outputting the bit stream;

a first buffer for storing an output from the read section and outputting a bit stream;

a navigation pack generator for replacing a real time data information pack in the bit stream output from the first buffer with a navigation pack, and outputting a resultant bit stream;

a second buffer for storing an output from the navigation pack generator and outputting a bit stream; and

a write section for converting the bit stream output from the second buffer into a bit stream conforming to a DVD-video standard, and writing the resultant bit stream in a second storage device,

wherein at least two of the read section, the navigation pack generator and the write section operate in parallel.

2. The high speed dubbing apparatus of claim 1, wherein the read section includes a stream analyzer for analyzing the bit stream read out from the first storage device and outputting obtained stream analysis information,

the navigation pack generator performs the replacement using the stream analysis information, and

the write section includes a stream rewriting unit for performing the conversion using the stream analysis information.

3. The high speed dubbing apparatus of claim 1, wherein the first buffer has a capacity equal to or less than the capacity of a cache memory included in the first storage device.

4. The high speed dubbing apparatus of claim 1, wherein the second buffer has a capacity equal to or less than the capacity of a cache memory included in the second storage device.

5. The high speed dubbing apparatus of claim 1, further comprising a buffer checking unit for measuring, by performing reading from the first storage device, the capacity of a cache memory included in the first storage device and outputting a measurement result,

wherein the capacity of the first buffer is changed according to the measurement result.

6. The high speed dubbing apparatus of claim 1, further comprising a buffer checking unit for measuring, by performing writing in the second storage device, the capacity of a cache memory included in the second storage device and outputting a measurement result,

wherein the capacity of the second buffer is changed according to the measurement result.

7. The high speed dubbing apparatus of claim 1, further comprising a buffer checking unit for measuring the capacity of a cache memory included in the first storage device by performing reading from the first storage device, for measuring the capacity of a cache memory included in the second storage device by performing writing in the second storage device, and for outputting a smaller one of obtained measurement results,

wherein the capacities of the first and second buffers are changed to a capacity indicated by the measurement result.

8. The high speed dubbing apparatus of claim 1, wherein the read section reads bit

streams in parallel from a plurality of said first storage devices in each of which portions of data in the DVD-VR standard format each corresponding to a given number of bits are stored, and the read section outputs the readout bit streams as one bit stream.

9. The high speed dubbing apparatus of claim 8, wherein the given number is 16.

10. The high speed dubbing apparatus of claim 8, wherein the given number is 8.

11. The high speed dubbing apparatus of claim 1, comprising a plurality of said first buffers,

wherein the read section reads a bit stream from a plurality of said first storage devices in each of which a portion of data in the DVD-VR standard format corresponding to data of a given size is stored and provides an output to a buffer associated with one of the first storage devices from which the readout bit stream has been output, and

after reading from one of the first storage devices has started, reading from another one of the first storage devices starts.

12. The high speed dubbing apparatus of claim 11, wherein the given size is an integral multiple of the size of a VOB (Video Object Unit).

13. The high speed dubbing apparatus of claim 1, further comprising a write unit for writing, in the first storage device, a bit stream obtained by conversion in the write section and conforming to the DVD-video standard,

wherein the read section reads the bit stream conforming to the DVD-video standard and written in the first storage device in the case of performing, after termination of dubbing of a content, dubbing of the content again, and

the write section writes the bit stream conforming to the DVD-video standard and read out by the read section in the second storage device.

14. The high speed dubbing apparatus of claim 13, wherein in the case of dubbing of a portion of the bit stream conforming to the DVD-video standard and read out by the read section, the navigation pack generator modifies a portion of information included in a navigation pack of the bit stream.

15. The high speed dubbing apparatus of claim 13, wherein in the case of dubbing of a portion of the bit stream conforming to the DVD-video standard and read out by the read section, the write section removes a PES_extension_field in the bit stream or modifies time information.

16. The high speed dubbing apparatus of claim 1, further comprising a filter for controlling an output of the bit stream obtained by conversion in the write section and conforming to the DVD-video standard to the second storage device,

wherein the read section monitors copyright information on the bit stream read out from the first storage device and conforming to the DVD-VR standard and outputs a monitoring result, and

the filter does not output the bit stream conforming to the DVD-video standard to the second storage device when the monitoring result of the copyright information output from the read section indicates prohibition of copying.

17. The high speed dubbing apparatus of claim 16, wherein the read section monitors CGMS (Copy Generation Management System) information as the copyright information.

18. The high speed dubbing apparatus of claim 16, wherein when copyright information on a first portion of the bit stream conforming to the DVD-VR standard indicates prohibition of copying and copyright information on a second portion following the first portion indicates allowance of copying, the read section holds time

information on the first portion and uses, as time information on the second portion, a result obtained by subtracting the time information on the first portion from time information on the second portion.

19. A high speed dubbing apparatus, comprising:

a read section for reading a bit stream conforming to a DVD-VR standard and a navigation pack added to the bit stream from a first storage device, removing one of a real time data information pack and the navigation pack in the bit stream, and producing an output;

a buffer for storing the output from the read section and outputting a bit stream;
and

a write section for converting the bit stream output from the buffer into a bit stream conforming to a DVD-video standard, and writing the resultant bit stream in a second storage device,

wherein the read section and the write section operate in parallel.

20. The high speed dubbing apparatus of claim 19, wherein the buffer has a capacity equal to or less than the capacity of a cache memory included in the first storage device and equal to or less than the capacity of a cache memory included in the second storage device.

21. The high speed dubbing apparatus of claim 19, further comprising a buffer checking unit for measuring the capacity of a cache memory included in the first storage device by performing reading from the first storage device, for measuring the capacity of a cache memory included in the second storage device by performing writing in the second storage device, and for outputting a smaller one of obtained measurement results,

wherein the capacity of the buffer is changed to a capacity indicated by the measurement result.